Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Please cancel claims 52-54 and 56, and add claims 67 through 70 as follows:

1. (previously presented) A method of coating a substrate with a cathode material for an electrochemical cell, the method comprising

providing a substrate selected from the group consisting of a paper substrate, a metallic foil substrate, a release liner, a metal coated paper, and a metal coated polymer,

coating edge material onto the substrate to contact a surface of the substrate, and

coating cathode material onto the substrate to contact a surface of the substrate,

wherein the cathode material and the edge material contact each other, and

wherein the thickness profile at the edge of the coated cathode material is improved relative to a thickness profile of an edge of a cathode material coated without the edge material.

2. (original) The method of claim 1 wherein the coated cathode material comprises a tapered edge, and edge material is coated to at least partially cover the tapered edge to produce a desired dry thickness profile at the tapered cathode material edge based on the combined dry thickness of cathode material and edge material.

3. (original) The method of claim 2 wherein a bulk portion of cathode material is coated to a desired dry thickness, and the thickness profile at the cathode material edge comprises a substantially uniform dry thickness that approximates the desired dry thickness of the cathode material to within 10 percent.

4. (original) The method of claim 1 comprising coating the cathode material and the edge material onto the substrate using a die coater having a first slot for coating cathode material and a second slot for coating edge material in contact with an edge of the cathode material.

5. (original) The method of claim 1 wherein edge material acts as a physical boundary against which cathode material forms an edge.

6. (original) The method of claim 5 wherein the edge material and the cathode material maintain a separation after being coated onto the substrate.

7. (original) The method of claim 5 wherein the edge material and the cathode material are immiscible.

8. (original) The method of claim 5 wherein the physical boundary of edge material alters the shape of the edge of the cathode material relative to the shape of a cathode material edge of a cathode material coated absent edge material.

9. (original) The method of claim 5 wherein

a bulk portion of cathode material is coated to a dry thickness in the range from about 3 to about 100 microns, and

a width of the edge of the coated cathode material is in the range from about 0.1 to about 3 mm.

10. (original) The method of claim 5 comprising coating cathode material and edge material onto a substrate using a die coater having a first slot for coating cathode material and a second slot for coating edge material, wherein shims are arranged in each slot to cause a stripe of edge material to be coated adjacent to a stripe of cathode material, on a moving substrate.

11. (original) The method of claim 10 wherein the first slot and the second slot are substantially parallel and are separated by a distance of less than about 5 millimeters.

12. (original) The method of claim 11 wherein the edge material and the cathode material are coated onto a substrate moving past the slots at a rate in the range from about 3 to 1000 feet per minute.

13. (original) The method of claim 5 wherein the edge material and cathode material are coated nearly simultaneously.

14. (original) The method of claim 5 wherein an edge of the cathode material and an edge of the edge material come into contact with each other before the edges of the materials contact the substrate.

15. (original) The method of claim 14 comprising nearly simultaneously coating the cathode material and edge material onto a substrate using a single die coater with multiple orifices.

16. (original) The method of claim 5 wherein the cathode material edge is approximately square, having a uniform thickness profile, and a width of less than a millimeter.

17. (original) The method of claim 1 comprising extrusion coating a cathode material onto a substrate, calendering the cathode material, and extrusion coating an electrically insulating edge material in contact with an edge of the calendered cathode material.

18. (original) The method of claim 17 wherein the electrically insulating edge material is coated using a hot melt extrusion process.

19. (original) The method of claim 17 wherein the electrically insulating polymer is chosen from the group consisting of a polyurethane, a polycarbonate, a polyolefin, a polyvinylether, an isocyanate, a polypropylene, a polyethylene , a polyacrylate, and combinations thereof.

20. (original) The method of claim 1 wherein the cathode material comprises an electrode active material, an electrically conductive material, an ionically conducting polymer, and an electrolyte salt.

21. (original) The method of claim 1 wherein the coating material is extrusion coated onto the substrate.

22. (original) The method of claim 1 wherein the edge material is extrusion coated onto the substrate.

23. (original) The method of claim 1 wherein the coating material is solvent coated onto the substrate.

24. (original) The method of claim 1 wherein the edge material is solvent coated onto the substrate.

25. (previously presented) A method of coating a substrate with a coating material, the method comprising

providing a substrate,

coating non-viscoelastic, polymer-containing, electrically insulating, edge material onto the substrate, and

coating cathode material onto the substrate,

wherein the cathode material and edge material contact each other,

wherein the edge material and cathode material are coated nearly simultaneously, and

wherein the thickness profile of the coating material edge is improved relative to a thickness profile of a coating material edge produced without the edge material.

26. (original) The method of claim 25 wherein the edge material is a barrier to one or more of the group consisting of light, water, and moisture.

27. (original) The method of claim 25 wherein the edge material comprises a polymer chosen from the group consisting of a polyurethane, a polycarbonate, a polyolefin, a polyvinylether, an isocyanate, a polypropylene, a polyethylene and a polyacrylate.

28. (previously presented) The method of claim 25 wherein the cathode material comprises an electrode active material, an electrically conductive material, an ionically conducting polymer, and an electrolyte salt.

29. (previously presented) The method of claim 25 comprising coating a cathode material and edge material onto the substrate using a die coater having a first continuous slot for coating a cathode material and a second continuous slot for coating an edge material, wherein shims are arranged in each slot to cause a stripe of edge material to be coated in contact with a stripe of cathode material, onto a moving substrate.

30. (original) The method of claim 29 wherein the first slot and the second slot are substantially parallel and are separated by a distance of less than 5 mm.

31. (previously presented) The method of claim 30 wherein the edge material and the cathode material are coated onto a substrate moving past the slots at a rate in the range from about 3 to about 1000 feet per minute.

32. (canceled)

33. (previously presented) The method of claim 30 wherein an edge of the cathode material and an edge of the edge material come into contact with each other before the edges contact the substrate.

34. (previously presented) The method of claim 25 wherein the cathode material is extrusion coated onto the substrate.

35. (original) The method of claim 25 wherein the edge material is extrusion coated onto the substrate.

36. (previously presented) A method of coating a substrate with a coating material, the method comprising

providing a substrate,

coating electrically insulating edge material onto the substrate using a coater that is a slotted die coater and that is not a curtain coater, and

using the same slotted die coater, coating cathode material onto the substrate,

wherein the edge material and the cathode material contact each other, and

wherein the thickness profile of the cathode material edge is improved relative to a thickness profile of a cathode material edge produced without the edge material.

37. (previously presented) The method of claim 36 comprising coating the cathode material onto the substrate using a slotted die coater having a first continuous slot for coating the cathode material onto the substrate and comprising a second continuous slot substantially parallel to the first slot for coating edge material onto the substrate, wherein the first slot and the second slot are separated by a distance of less than about 5 millimeters.

38. (previously presented) The method of claim 36 wherein the edge material and cathode material are coated nearly simultaneously.

39. (previously presented) A method of preparing a battery cathode, the method comprising the steps of

providing a substrate,

using a slotted die coater to coat a cathode material onto the substrate, and

from a second slot of the same die coater, coating edge material onto the substrate in contact with the cathode material.

40. (original) The method of claim 39 wherein the edge material is an electrically insulating material that is a moisture barrier.

41. (original) The method of claim 39 wherein the die is a dual slot extrusion die.

42. (original) The method of claim 39 wherein the die is a slot fed knife die.

43. (original) The method of claim 39 wherein the die is a fluid bearing die.

44. (original) The method of claim 39 wherein a single die with multiple continuous slots is used to continuously coat multiple stripes of cathode material and edge material onto a moving substrate, further comprising the step of slitting the substrate into separate widths containing a cathode material stripe in contact with two edge material stripes, followed by rolling the individual widths of coated substrate.

45. (previously presented) The method of claim 39 wherein the dry thickness of the edge material and the dry thickness of the cathode material, where the edge of the edge material contacts the edge of the cathode material, are approximately equal.

46. (previously presented) The method of claim 39 wherein the edge material is immiscible with the cathode material, as coated.

47. (previously presented)A method of coating a substrate with a cathode material for an electrochemical cell, the method comprising

providing a substrate,

coating a cathode material onto the substrate to contact a surface of the substrate, and

coating an insulating edge material onto the substrate to contact a surface of the substrate, the edge material also being a barrier material,

coating a separator layer comprising solid polymer electrolyte, in contact with the cathode material,

wherein the cathode material and the edge material contact each other.

48. (original) The method of claim 47 wherein the cathode material is extrusion coated.

49. (original) The method of claim 47 wherein the edge material is extrusion coated.

50. (original) The method of claim 47 wherein the wet coating thickness of the edge material is approximately equal to the wet coating thickness of the cathode material.

51. (previously presented) The method of claim 47 wherein the dry coating thickness of the edge material is approximately equal to the dry coating thickness of the cathode material.

52-56. (cancelled)

57. (previously presented) The method of claim 1 wherein the substrate is selected from the group consisting of a metallic foil and a release liner.

58. (previously presented) The method of claim 1 wherein the substrate is selected from the group consisting of aluminum foil, copper foil, and a silicone release liner.

59. (previously presented) A method of coating a substrate with a cathode material for an electrochemical cell, the method comprising

providing a substrate,

coating edge material onto the substrate, and

coating cathode material onto the substrate,

wherein the coating material and the edge material contact each other,

wherein the thickness profile at the edge of the coated cathode material is improved relative to a thickness profile of an edge of a cathode material coated without the edge material,

wherein edge material acts as a physical boundary against which cathode material forms an edge, and

wherein the edge material and the cathode material maintain a separation after being coated onto the substrate.

60. (previously presented) The method of claim 25 wherein the cathode material comprises an electrode active material and an electrically conductive material.

61. (previously presented) The method of claim 29 wherein the cathode material comprises an electrode active material and an electrically conductive material.

62. (previously presented) The method of claim 25 wherein the edge material comprises a thermoplastic polymer.

63. (previously presented) The method of claim 36 wherein the edge material is immiscible with the coating material, as coated.

64. (previously presented) The method of claim 29 wherein the edge material comprises a polymer chosen from the group consisting of a polyurethane, a polycarbonate, a polyolefin, a polyvinylether, an isocyanate, a polypropylene, a polyethylene and a polyacrylate.

65. (previously presented) The method of claim 25 wherein edge material acts as a physical boundary against which cathode material forms an edge.

66. (previously presented) The method of claim 29 wherein edge material acts as a physical boundary against which cathode material forms an edge.

67. (new) The method of claim 25 wherein the cathode material comprises electrode active material and polymer.

68. (new) The method of claim 25 wherein the cathode material comprises electrode active material, ionically conductive polymer, and electrolyte salt.

69. (new) The method of claim 36 wherein the cathode material comprises electrode active material and polymer.

70. (new) The method of claim 36 wherein the cathode material comprises electrode active material, ionically conductive polymer, and electrolyte salt.

Support for added claims 67 through 70 can be found in the specification as originally filed, e.g., from the bottom of page 18 through the top of page 22.